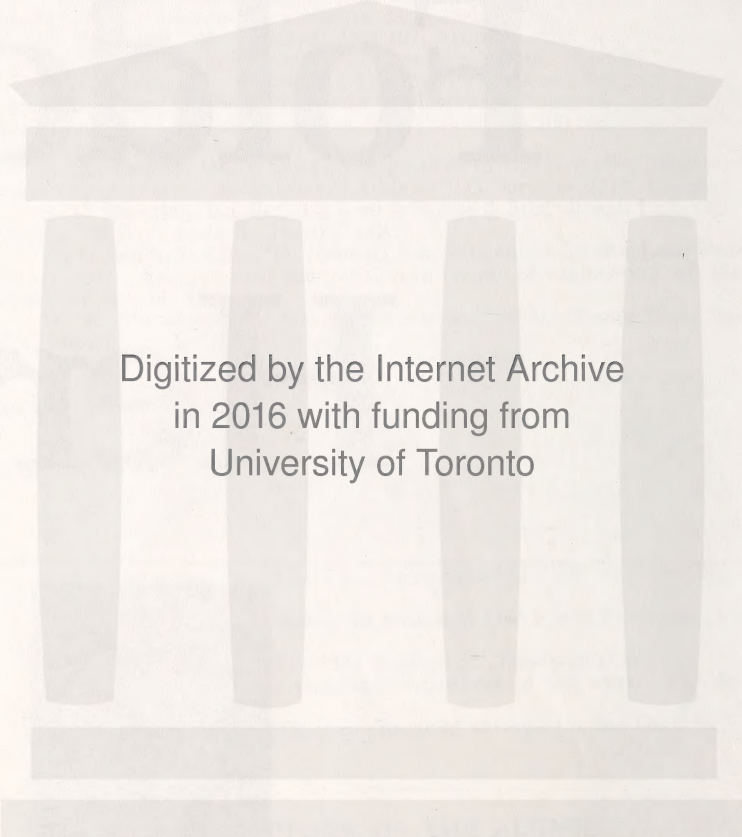


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Applied Science

INCORPORATED WITH

TRANSACTIONS OF THE UNIVERSITY OF TORONTO ENGINEERING SOCIETY

Old Series Vol. 27

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New Series Vol. X. No. 5

THE UNIVERSITY AND INDUSTRIAL RESEARCH

BY DEAN W. H. ELLIS

Among the treasured possessions of the library of the University is a set of the *Annales de Chimie*, the gift of the seventh Duke of Devonshire through the Committee formed in the Old Country to aid in replacing the loss caused by the disastrous fire of February 14th, 1890.

The set is complete from beginning of the series to the date of the fire and on the fly-leaves of the earlier volumes is stamped the honoured name of Henry Cavendish, who was the grandson of the second duke.

The first volume, as we read on the title page, was conducted by M. M. Guyton de Morveau, Lavoisier, Mouge, Berthollet, de Fourcroy, le baron de Dietrich, Hasenfratz and Adet. In 1791 the editors became Mm. Guyton ci-devant de Morveau. Dietrich had dropped his title of baron and de Fourcroy the aristocratic "de." Then follows a gap during which the *Annales* were not published and when in 1797 the editors' names again appear as les citoyens Guyton, Mouge, Fourcroy and the rest, the name of Lavoisier is not among them for that gap in her annals is the record that science has made of the Terror and the Terror had sent Lavoisier to the guillotine with the mocking words, "The Republic has no need of savants." From this delirium the Republic quickly awoke and her penitence for her murdered savants was bitter and sincere.

The avant-propos of the volume of the *Annales de Chimie* for the year V. of 1797 reads as follows:—

The *Annales de Chimie* have been interrupted for three years after the publication of the 18th vol. The necessity of occupying oneself solely with the defense of the Republic, the events of the revolution, the public functions of the authors, are the natural causes of this suspension. But the time has not been entirely lost for science. Chemistry above all has been cultivated with a success of which all citizens have been witnesses. She has created for the defence of the fatherland resources and means truly unexpected. Her immediate utility for the most pressing needs of society renders her more precious and commendable than ever in the eyes of the friends of mankind and of all good, true citizens. Also the number of those who study chemistry increases every day; also it becomes

one of the bases of instruction in all modern schools and above all in those which attain to the highest degree of human knowledge.

Among all the civilized nations where one works without relaxation in perfecting reason (ou l'on travaille sans relâche au perfectionnement de la raison) the sciences which influence territorial and industrial productions, and among which chemistry holds to-day the first rank, are held in general esteem. The cultivation of the fields, the multiplication of animals, the establishment of manufactures, the exchange of the creations of industry for the production of other peoples,—these are the true sources of the prosperity of nations in which all men are called to assist and where each will find his private enjoyment in serving his country.

Chemistry illuminates the practice of the arts; without it one can neither hope for constant products nor economy in processes nor perfection in operations. From failure to appreciate the advantages of chemistry and to make themselves acquainted with its results, manufacturers have often committed errors which have cost them the loss of their establishment. Within the last few years a mere handful of clever chemists have become manufacturers and already a crowd of processes have been rectified; and new arts have been created. France has ceased to be tributary to other nations for a great number of useful products. The preparation of mineral acids, of the different salts, of metallic oxides, the dye works, the glass works, so multiplied in France in the last fifteen years are authentic proofs of the unappreciable advantages of chemistry. Without the light of this science should we have made the quantity of saltpetre, of gunpowder, that we have manufactured in the last four years? Should we have had the copper, the iron, the steel, the potash, the soda, the leather and so many other precious materials which we have employed to vanquish our enemies and to sustain our existence? Without chemistry should we have wrought to perfection as we have done—aerostation?

At the moment when victory has crowned our efforts, when a wise constitution has fixed the lot of France, when talent is honoured there and called to serve the country; at the moment above all when new schools are arising in the departments and are going to spread education and make the need of it felt on every hand, the authors of the *Annales de Chimie* believe that the need is pressing that they should continue their work. Their aim will be to carry the torch of science into all the workshops; to introduce new processes; to describe the arts less known or even entirely unused in France, to improve vicious practices; to rectify the errors still too numerous in many manufactures; to give the means of employing in useful preparations a crowd of substances hitherto too much neglected or even allowed to be lost; to disperse the secrecy of the workshops often deceptive, and their charlatanism always perfidious; to establish the clearest theories of the most obscure operations; to direct the steps almost always hesitating and uncertain of the workman; to destroy mystery and to repel fraud; in a word, to employ one of the most exact sciences in the multiplication of all the objects of national industry. Without neglecting philosophical

chemistry they will apply themselves specially to industrial chemistry, to that which creates, which illuminates and which brings to perfection the arts. They will not repulse brilliant and ingenious theories; but they will above all present their useful applications. It is to artists, to manufacturers and to intelligent artisans, to enlightened and honourable business men, for whom they particularly destine this work. Scientific men and philosophers will find there at the same time all the progress of physics and the advances of the human reason. It is obvious that in improving the arts among a great people, one improves at the same time the reason of man.

It is not necessary to say that we have combined all possible means to join to the discoveries of the French those which have been made in all the other nations in which chemistry and the chemical arts have been cultivated with success, and above all in Germany, in Spain, in Holland, in Italy and in England. The authors of the *Annales de Chimie*, having resumed their work, propose to unite in two volumes which will form the nineteenth and twentieth of the collection, the principal discoveries made and most remarkable work in Chemistry done in France from the month of September, 1793 to the month of January, 1797.

The contents of the volume to which these remarks form the preface were:

1. A notice to workers in iron on the fabrication of steel in which the physical and chemical properties of iron and steel are described and the methods of its production in England and elsewhere are given.

2. Then follows a description of the methods of fabrication of *armes blanches* at Klingenthal in Alsace with details of the manufacture of sabres and bayonets, ramrods, etc.

Then comes a report by Pelleher and others on various methods of obtaining soda from common salt, first of which is that of citizen Leblanc, presented by him with a noble devotion to the public good.

3. Memoir on the means of multiplying the fabrication of potash in France.

Instructions for obtaining paper by working up printed or written sheets.

9. Report on the manufacture of soap.

10. Extract from a report on attempts made at Romilli to separate the copper from bell metal.

11. Instructions as to the new Republican weights and measures.

12. On the extraordinary production of saltpetre in France during years 2 and 3 of the Republic.

13. Test on a grand scale made in the Russian army on the purification of water by powdered charcoal.

In these words the infant Republic made its confession of scientific faith. The position of the British Empire to-day resembles in some respects that of the French republic at that time. Against her were arrayed the trained armies of Austria and Prussia and she was forced to strain every nerve to improvise an army, to arm it, train it and provide it with munitions. If we, like revolutionary France, hope to rise triumphant from the crisis in which we now find

ourselves, we must, like her, call to our aid organized science. Scientific men our race has produced in abundance and these of the highest eminence, whose contributions to science, pure and applied, have been of the first importance. But of organization in scientific matters we have lagged behind and in particular we have been outdistanced by our enemies, the Germans.

There is no need to emphasize this. It has been dinned in our ears by friend and foe alike, but it must be insisted on that our inferiority in the application of science to industry, where there has been failure, has not been due to lack of genius or to lack of knowledge, but to other causes, partly educational, partly economical and partly political.

The *raison d'être* of a university is to see to it that there may never be wanting a due succession of persons duly qualified for the public service.

The English idea of public service is the church, the bar and parliament, and the university ideal training has been the training that will qualify a man for success in those walks,—in short the power of speaking or writing convincingly.

In Germany where the power of popular assemblies was a negligible quantity the university ideal was quite another. In Germany men looked for success, not from the pleasure of a mob, whether that mob was called a jury, a congregation, or a parliament, but from the approval of their superiors, from experts, that is such as judges and heads of departments. Under these circumstances the key to success is efficiency, ability to do things, not fluency in talking about them. Efficiency then has been the ideal of the German universities.

Now in a very large number of cases the proprietors and directors of the German industrial establishments had been educated in one of these universities and when they required scientific advice they naturally looked to a member of the university for this advice and more than this, their education enabled them to appreciate this advice when it was given. They and their scientific advisors had the same point of view. They could understand each other's reasoning and appreciate each other's mental attitude. To this sympathy between the business manager and the scientific expert in his employ is to be attributed in a very large measure the successful application of science to agriculture in Germany.

What can we in this University do to promote and foster such a sympathy between the laboratory and the workshop, between the technical graduate and the foreman and superintendent?

First, we must give our students the best possible grounding in pure science and secondly, we must shew them the way to find out new things for themselves.

The University must, like a parent bird, nourish her brood by an abundant supply of suitable food, industriously gathered, selected and, if necessary, predigested, but when the nestlings are ready for flight she must guide and exercise by precept and example their unaccustomed wings till they are ready to shift for themselves

and their wings are strong and fit for their bold and adventurous flight into the unknown.

The Faculty of Applied Science and Engineering of the University of Toronto can point with pride to the work of its graduates and to the positions they have won in the Province and outside it as testimony that they have in the past been not unfaithful to the trust which the Province has reposed in it. But we feel that this is no time to rest upon our laurels. If we are to rise to the supreme demands of the present crisis and to its unique opportunities we must take some definite step forward in the direction of the encouragement and organization of industrial research. It appears to many of us that the most hopeful course in our immediate future would be the foundation of a School of Engineering Research, properly equipped, properly supported and directed by those among us who have shown themselves capable of leadership in this direction.

It is to be hoped that some such scheme will commend itself to the authorities for immediate adoption.

RETIRING PRESIDENT'S ADDRESS

Gentlemen,—As retiring president of the Engineering Society, I wish to thank you for your hearty co-operation and support during this past year. It has been a year without parallel in the history of the School, as also it has been in the world at large. You have stood by the executive, and rallied around us with the School spirit in a way that has never before been equalled.

Our meetings this year, in spite of greatly decreased attendance at the School, were successful throughout. They comprised the addresses given by A. H. Harkness, '95, on St. Andrew's "Movable Dam;" J. A. D. McCurdy, '07, "Aviation;" Lieut. (Prof.) T. R. Loudon, '05, "Military Engineering;" D. A. Molitor, C.E., "Surveying as Taught at Cornell University;" Lieut. M. B. Watson '10, of the Royal Engineers, on leave from France, who gave us a vivid account of engineer's work at the front.

The Annual Dinner held on February 4th, was one of the most successful functions ever held at the School and it was unique in every regard. One outstanding feature was the hearty support which you undergraduates gave the executive, probably for the reason that it was the last opportunity which many of us would have to be present at such an occasion. The dinner was also a success financially, and this will, I hope, form a precedent for the years to come.

* * *

Your thanks, gentlemen, are due to the Faculty for the deep interest taken by them in the Engineering Society, particularly to Dean Ellis, to a committee composed of Prof. H. E. T. Haultain, Prof. P. Gillespie, Prof. J. W. Bain and Prof. W. H. Price, appointed by the Council to aid the Society when we were in difficulty; and to Prof. C. H. C. Wright. These gentlemen have given time and

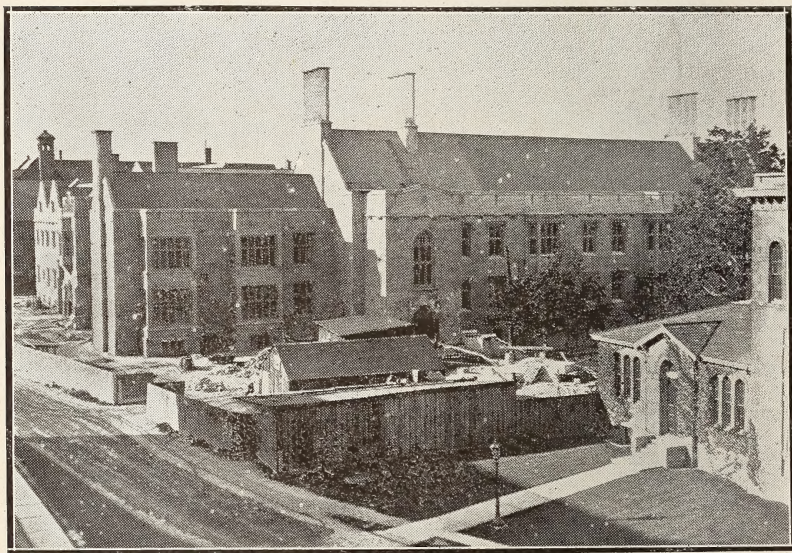
thought, and invaluable assistance in the interests of the Society, and our debt to them is great.

We are also greatly indebted to Mr. J. L. Ross of this city, a past president of the Literary Society. At a time when the affairs of the Engineering Society demanded the most careful handling, Mr. Ross gave most generously of his time and advice in legal matters without any charge whatsoever.

Your executive committee has been an able and strong one. They have worked hard and to them belongs the credit for what may have been accomplished this year. In particular may I mention W. B. Honeywell, to whom as interim president, is due your sincerest appreciation. Through the efforts of Mr. Honeywell and the other members of the executive relations of the Society to its creditors have been placed upon a satisfactory basis.

It is a pleasure on your behalf to welcome Mr. Banigan, as president-elect for the coming year. You have conferred upon him the highest honor in the gift of the undergraduate body of this Faculty. The responsibilities of this office are great and I hope that the high standards set by his predecessors may be even eclipsed in the coming year. I congratulate you on your choice of a president and executive committee.

W. LESLIE DOBBIN.



Hart House Nearing Completion

APPLIED SCIENCE

INCORPORATED WITH

Transactions of the University of Toronto Engineering Society

DEVOTED TO THE INTERESTS OF ENGINEERING, ARCHITECTURE
AND APPLIED CHEMISTRY AT THE UNIVERSITY OF TORONTO

Published by the University of Toronto Engineering Society

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ENGINEERING SOCIETY AFFAIRS IN 1915-16

During the past year the Engineering Society has passed through a severe financial crisis. In July, 1915, Mr. R. G. Lye, who had been appointed secretary in April, was compelled to approach the graduates with the request for a loan of \$500 to meet pressing obligations. A committee of graduates consisting of Messrs. E. W. Oliver, W. A. Bucke, W. B. Russel and H. E. T. Haultain undertook to secure the desired sum which was raised in the form of notes in Toronto, Montreal, Ottawa, Cobalt, Porcupine and New York. The necessary payments to creditors were duly made, and by October the notes given by the graduates had been entirely redeemed.

The financial condition of the Society obviously needed the most careful scrutiny, and after an audit had been made, the following facts became evident. The monthly issues of APPLIED SCIENCE had for some time past been published at a loss. This deficit was partly due to a falling off in advertisements as a result of the war, and partly to the fact that less than 50% of the graduates had paid their annual subscription.

Another important item on the balance sheet was "stock on hand." An inventory showed that some of the stock was very slow selling, an accumulated legacy in fact from several previous years.

Since 1907 a graduate had been employed by the Society as a permanent paid secretary and editor of APPLIED SCIENCE. During the years when the attendance was large the receipts from fees, the profits of the supply department, and the income from advertisements had been sufficient to appear to justify the payment of a salary. In 1915 the attendance had fallen and was still falling off steadily owing to the war and it became evident that the Society could no longer afford to carry on its business by the aid of a salaried official.

The above facts, together with the pressure of the creditors, led to a complete reorganization of the business methods of the Society. Under the expert guidance of Mr. J. L. Ross of the legal firm of Messrs. Ross & Holmsted, Toronto, the financial statement of the Society was laid before the chief creditors, and a working agreement was arranged by which the sums owing them were to be reduced pro rata as rapidly as possible, and some of the slow-selling stock was to be taken back by the creditors. Special efforts were made to decrease the amount of other dead stock, which met with considerable success.

The paid secretary resigned early in the session, and has not been replaced. The business has been carried on without loss of efficiency by the executive committee, with the aid of an assistant, Miss Dunlop, who assists in selling the goods and attends to most of the clerical work.

The publication of APPLIED SCIENCE was stopped in August, 1915. The present issue is the only one which it is intended to publish until after the war.

Owing to the resignation of the president at the beginning of the session, the vice-president, W. B. Honeywell shouldered the responsibilities during this difficult transition period. At a meeting of the Society held on November 17, 1915, W. L. Dobbin was elected president by acclamation. The cares of the office during the session have been particularly onerous and called for constant, unselfish effort. The affairs of the Society are now on a smooth running and efficient basis.

Communications from the Engineering Alumni Associations of Toronto and Ottawa have been received and are printed in this issue.

In Montreal there is a Toike Oike Club. In Cobalt, Haileybury, New Liskeard and Porcupine there is the Temiskaming Engineering Alumni Association. Both of these are alive and active. In New York there are a few ever interested and ever active graduates. In Pittsburg, Winnipeg, Vancouver there are or there have been recently active Engineering Alumni Associations. We are told that at one time in recent years there were twelve or thirteen organized associations. If there had been a central organization not controlling, but co-operating with branches, the benefit to the school, both graduates and under-graduates, would be continuous.

ENGINEERING ALUMNI ASSOCIATION

Doubtless, many of the graduates of the School of Practical Science and the Faculty of Applied Science are not aware that such an organization as "The Engineering Alumni Association of the University of Toronto" exists; therefore, the Toronto Executive Committee welcomes this excellent opportunity of acquainting such graduates with the fact that there is in Toronto an active Alumni Association. The following account will give an idea of the organization and we hope it will stimulate the dormant interest of some graduates in "School" affairs so that they will line up behind a big effort to increase its sphere of usefulness. With the co-operation of the graduates, a strong organization will be developed.

Early in the nineties an Alumni Association had been formed but it had little or no active life and before long ceased to exist even in name.

In the year 1909 some active graduates realized that, in order to maintain the prestige of the graduates, some organization must be formed through which they could express their respective views on matters of vital interest to the welfare of the school. Consequently, a general meeting of the graduates was called and an executive committee elected. This committee prepared a set of by-laws, which were adopted at the next annual meeting. The first two clauses are as follows:—

Name. The name of this Association shall be the Engineering Alumni Association of the University of Toronto.

Objects. (a) To endeavor to increase the interest of the graduate body in University affairs looking to the still greater efficiency of the Faculty of Applied Science and Engineering.

(b) To hold frequent meetings for the promotion of social intercourse amongst the graduates, and for the discussion of matters affecting the interests of this Faculty and the graduate body.

(c) To institute the necessary representations to carry into effect the recommendations of the Association.

Two other clauses read:—

All business meetings of both the Association and of the Executive Committee shall be held in Toronto.

An annual fee of one dollar shall be requested from each member to provide funds for the petty expenses of the Association.

The Engineering Alumni Association of the University of Toronto thought it wise to extend their activities and undertook to create Research Fellowships. Among other clauses by-laws governing these fellowships contained the following:—

These fellowships shall be called "Research Fellowships in the Faculty of Applied Science and Engineering, University of Toronto."

The value of these fellowships shall be five hundred dollars (\$500.00).

These fellowships shall be open to any graduate of the School of Practical Science and of the Faculty of Applied Science and Engineering of the University of Toronto; also to anyone who has

attended a regular course for two years in this Faculty and subsequently by following his profession has attained a position of importance in his field of work.

Each fellow shall devote at least 26 weeks' work to his research.

It is intended that the Research Work during the life of the fellowship shall be conducted in the laboratories of the Faculty of Applied Science and Engineering, University of Toronto, and under the supervision and guidance of the professor at the head of the department involved.

On the completion of his work under this fellowship, the holder shall make a written report to the executive committee of the Engineering Alumni Association outlining the course of his Research Work and the results obtained; provided, however, that if on representation to the Executive Committee, it shall be deemed advisable to withhold such information for a time, permission so to do may be granted.

Since the inauguration of the Research Fellowship, the fellowships have been awarded to: M. R. Shaw, 1909, Chemistry, awarded in 1912, and W. P. Dobson, 1910, Investigation of Disturbances in High Tension Transmission Systems, awarded in 1912, renewed for two additional terms. Owing to the lack of space, we are unable to publish the results of these scholarships, but suffice it to say that the executive feels that they have been amply repaid for the effort which they put forth in securing sufficient funds to carry on this work.

We also wish to take this opportunity of thanking the graduates who subscribed to this worthy object. It is unfortunate that, owing to the present conditions, we will not be able to carry on this valuable work, but we live in anticipation of increased activities after the restoration of normal conditions. In the interim, we hope that the graduates will not forget and will be ready to contribute when called upon.

During this year, the Toronto Executive Committee are endeavoring to affect a reorganization of the whole of the association so that branches will work in harmony with and through the organization located in Toronto. A new set of by-laws is being prepared and they will be submitted to the different branches for discussion. If we are successful in this venture we feel that a great deal will have been accomplished, and the bright future of the organization will be ensured.

“W. R. WORTHINGTON,”

President, Toronto Branch.

OTTAWA ALUMNI ASSOCIATION

For many years Ottawa “School” men have felt that there should be some recognized relationship between the Faculty of the “School” and the graduate body, and also between the graduates themselves resident in various centres. We have felt that there is a great work to do in Ottawa for the “School” in advancing the interests of “School” men in the various departments of the Govern-

ment service, in assisting and advising the recent graduates regarding opportunities in the Government service, and in helping undergraduates to find suitable employment during the summer vacation.

A few years ago, a few graduates of the "School" resident in Toronto organized what was known as the Engineering Alumni Association of the University of Toronto. A constitution and by-laws were adopted which would indicate that the Association was intended to comprise all graduates of the "School." This Association has done good work in the interests of the "School," and has, for instance, conceived and carried out a scheme of research from which it is understood excellent results have been obtained.

Quite independent of this Association, "School" organizations in various centres have been formed without any reference whatever to it. For instance, Ottawa "School" men have formed the Ottawa Branch of the Engineering Alumni Association of the University of Toronto. A constitution and by-laws have been adopted which take no cognizance of the original Association in Toronto.

The present situation, therefore, is that there are "School" organizations of various descriptions in Toronto, Ottawa, Montreal, Pittsburgh, Winnipeg, Calgary, Vancouver, which are not correlated in any way. In union there is strength, and the Ottawa "School" men feel that the graduates of the "School" will never be able to make their influence felt for the best interests of the old "School" until the various "School" alumni organizations are properly correlated.

In my opinion this correlation can be best realized by having branches of the University of Toronto Engineering Alumni Association formed throughout the various centres. Provision should be made for the relationship of these branches with the Toronto organization and with one another. Just what relationship this should be may be somewhat difficult at the present stage to work out, but a satisfactory solution can no doubt be had if the problem is given any thought or consideration. In so far as Ottawa "School" men are concerned, there need be no doubt about their heartiest co-operation and active assistance in any movement that will advance the interests of the old "School," its Faculty, its graduates and its undergraduates.

"J. B. CHALLIES,"

Secretary, Engineering Alumni Association,

Ottawa Branch.

SCHOOL WELL REPRESENTED IN INTER-COLLEGE DEBATING

The second year of School's entry into the Inter-College Debating Union showed a great improvement over last year. This year we defeated Knox College, in the first round. Mr. L. R. Shoebottom, '17, and Mr. V. S. C. McClenaghan, '18, were the successful debaters.

In the next round we drew against Wycliffe College and were defeated by a narrow margin. The judges giving the decision

stated that while the School debaters were better on matter they lost on style. This goes to show the necessity of a course of public speaking in this institution before our men can hope to cope on equal terms with men from other colleges where such a course is in force. Not only for debating would such a course be a decided benefit for School men, but it is now recognized that a successful engineer, no matter in what branch he specializes, is under a great handicap if he has not the ability to speak on his feet.

Mr. H. L. McClelland, '16, and Mr. V. S. C. McClenaghan, '18, represented the School in the second debate. Wycliffe College finally won the Kerr Shield, the debating trophy of the I.C.D.U.

Mr. W. B. Honeywell, '17, was the School representative on the Inter-College Debating Union and was elected vice-president.

ATHLETICS

Following the precedent established in 1914-15, no teams represented the university against outside teams last year, attention being confined to the inter-faculty contests. In rugby, Junior School won the Mulock Cup from Victoria, but lost at soccer. Both junior and senior teams won their respective groups in hockey, but each lost out to the two Dental teams in the semi-finals. The sophomores defeated the freshmen in their annual fall struggle, and our track team captured third place at the inter-faculty field day sports. On another page is shown Hart House, the new students' building, as it appeared on June 22. It is expected that the building will be opened next winter.

A PSALM OF LIFE AT S. P. S.

A. T. C. McMASTER, '01

[Few of us know the history of our Psalm of Life, or the original wording of it. Prof. Price tells us that Mr. McMaster of his year was the one whose poetic skill created it. Mr. McMaster, who is now an engineer and contractor in Toronto, has consented to give us the story.—EDITOR].

THE ORIGINAL WORDS

1. Stand up! Stand up for the Science Faculty!
With the Arts and the Meds they form a trinity.
Then shout you chaps for the S.P.S.,
Whose motto is meekness and peacefulness.
2. The first-year man when he comes up to the School
Gazes with awe on a two-foot rule.
Then shout——
3. The second-year man has learned about the tap;
He sizes up the freshman with an eye to a scrap.
Then shout——

4. The third-year man'd rather fall down a mine
Than go to the depths of Constructive Design.
Then shout——
5. The fourth-year man comes back to have a fling;
He burns round the lab and he "doesn't do a thing."
Then shout——
6. Now we hope this song has touched your hearts,
And you won't consign us to warmer parts.
For we've shouted this psalm for the S.P.S.,
Whose motto is meekness and peacefulness.

This is the song we sang when welcoming the then Duke of York, our present King George V, to old Varsity. I am informed that the blame for it has been laid upon my shoulders. I must admit some of it, but will tell you the whole story and let you judge for yourselves.

The Convocation at which the Duke received his honorary degree, as he passed through Toronto on his grand tour of the British Empire in 1901-02, was held in the East Hall of the main building. The ground floor was reserved for the invited guests, and the small gallery was given over to the students. This necessitated the choice of just two or three representative members of each class. Among those chosen from S. P. S. was the writer, then in his fourth year.

In order that things might run smoothly, it was decided to have some rehearsals of college yells and songs in one of the class rooms of the main building. It then transpired that all the faculties and affiliated colleges, but S.P.S., had special songs of their own. Where-upon one of the professors present, recognizing in me one who formerly had followed him along arduous trails in ancient literature, turned his sarcastic rhetoric on me and questioned why the School had never been able to produce or even adopt anything worth singing. Now in those days criticism from any outsider was strenuously resented, for, when not busy with lectures or drafting or lab work, we were working off our pent-up energies in winning all inter-faculty cups, or turning things inside out with our famous scraps. The result of that criticism, therefore, was to get my Irish up, and D. L. H. Forbes¹ and M. V. Sauer² and I spent the evening dopping out the Psalm of Life at S.P.S. to the then popular air of "The Dutch Compane.".

The next morning I submitted the Psalm to our Dean (the late Dean Galbraith) to make sure that he had no objection to any of the sentiments expressed, had it typewritten, and placed in the hands of the vocal committee so that when the next rehearsal took place, either that afternoon or the following one, there was no longer any cause to be ashamed of a faculty unhymned and unsung.

It has been a surprise to me to find such a hasty effort still

1. Chief Construction Engineer, Chile Exploration Co., Chuquicamata, Chile, South America.

2. With the Greater Winnipeg Water District,

clinging to the old School. I believe the real cause has lain in the deep irony of that last line of the refrain:—"Whose motto is meekness and peacefulness." I well remember the glee with which Max Sauer and I greeted this masterpiece when suggested by Dave Forbes. And possibly His Royal Highness, all unconscious of its irony, may have been comparing this sentiment with some of the truculent utterances of the War Lord against whose mailed fist so many of our School men are now opposing their best efforts of body and mind.

HOW CANADIANS JOIN THE AVIATION CORPS

Canadian applicants for aviation training have but the British service to consider as, so far, the Canadian Government has not seen fit to establish an Aviation Corps, distinctively Canadian.

The British Air Service is divided into two sections, the Royal Naval Air Service and the Military Wing of the Royal Flying Corps. For both of these services there is a very rigid examination for physical condition and an even more rigid one in regard to the eye sight. An aviator must have eye sight of the very highest to enable him to distinguish objects at a long distance and to easily and quickly determine the color of the various objects which he may see during his flights.

The question of age also enters into consideration for both branches of the service. For the Navy, applicants must be from 19 to 25 years of age and for the Army up to 30 years. The Navy is, perhaps, more rigid as to the question of age, as they ask for a copy of the birth certificate of the applicant. Applications are made to Admiral Kingsmill of the Department of the Naval Service at Ottawa and in every case the applicant has to meet him personally, in addition to the production of a number of certificates of good character, etc.

The applicant having passed these, he must needs qualify for his pilot's certificate and the majority of them have done so at the aviation school operated by Curtiss Aeroplanes & Motors, Limited, which is situated at the Rifle Ranges at Long Branch. The cost of such course is four hundred dollars, but of this \$375 is refunded by the British Government upon the aviator successfully passing the further tests that are imposed in England, namely, cross country flying. This year the Canadian Government is making a grant of one hundred dollars for maintenance to each candidate who successfully gets his pilot's certificate.

The course of instruction in flying is simply the handling of a machine. The first trip is usually a "joy ride" to give the candidate some idea of what the machine can do and get him accustomed to its operation. In succeeding flights the candidate is gradually given control of the machine. These machines are equipped with dual control so that this can easily be accomplished, the instructor being ready at any time to check any error made by the pupil. Gradually the pupil becomes proficient in handling the machine in the air. Then there follows a more tedious section of the instruction,

that of enabling him to properly take the machine off the land and bring it down safely without the destruction of the machine. This is the hardest part of the instruction, because the pupil has to learn to judge the distance and speed of the machine.

After a course of five or six weeks of instruction the day of testing arrives and under the oversight of some representative of the Royal Aero Club of Great Britain the candidate will take the machine out alone and be called upon to make two series of figure eights, from one of which he is to make a landing within a certain distance of a prearranged mark. The final test is to ascend to a height of about 500 feet, then cut off his motor, glide down, landing within a certain distance of a mark. Having accomplished this successfully a report is made at once to the Royal Aero Club and the candidate is entitled to receive his certificate, which he has to obtain personally in England.

Immediately following the successful tests the information is forwarded to Ottawa and the candidate is practically under orders and is sent to England within a week or ten days.

On reporting there the additional training is at once taken up. This includes a series of lectures on aeroplane and motor construction, wireless, signalling of all kinds, machine gun work and bomb dropping. Further, the pupil has to become proficient in handling a certain number of other makes of machines. He is also called upon to do cross country flying to a distance of from 40 to 60 miles, make a report upon what he has seen, and draw a map of the district over which he flew. When he has done this successfully, he obtains his "ticket" and becomes a full fledged pilot, either military or naval, and is entitled to the wings, the badge which shows his proficiency. He then may be sent out as an instructor at one of the schools or may go into active service.

Among the many who have gone through the Curtiss school and are now in England or France are the following: School men: D. G. Joy, G. A. Gooderham, C. N. Geale, G. R. S. Fleming, G. K. Williams, R. D. Delemere, C. G. Hewson, J. Robinson, E. R. Grange, K. Waugh, A. G. Knight, G. G. MacLennan, W. R. Da Costa, F. C. Birtle, G. S. Gray, R. H. James, N. C. Millman, R. E. A. Macbeth, H. A. Wood, W. M. Carlyle.

"OUR RESPONSE TO THE EMPIRE'S CALL"

Ever since war was declared, there has been a steady stream of School men answering the call of King and Country. They are to be found in almost every unit and arm which Canada has contributed or is contributing to the cause. The graduates from coast to coast have flocked to the flag.

Many graduates, as well as under-graduates, were in the first Canadian Contingent; more were in the second, while a host of others are enlisting and getting ready.

To-day we honour the names of the following nine of our number who have given their lives for us and our country: Andrews, F. C., '14; Eardley-Wilmot, F. L., '17; Helliwell, J. G., '10;

Hughes, C., '09; Klotz, H. N., '09; Lawless, N., '11; Revell, G. E., '99; Taylor, G. B., '14; Ryerson, G. C., '05.

Many have received well merited promotion, others have received special mention in order, while not a few have won military honours. The Chief Intelligence Officer of the First Contingent was Major C. H. Mitchell, '92, of the Corps of Guides, now Lieut.-Colonel on the General Headquarters Staff of the Canadian Army Corps in France. His work has been mentioned many times in despatches, for which he has been awarded the D.S.O., by the King and La Legion d' Honneur Croix d' Officier by the President of the French Republic. The Intelligence Officer of the Second Contingent was again a School man, Major J. L. R. Parsons, '01. Like the first contingent, this too contained many School men in every capacity, as may readily be seen in the published list, which follows.

In many of the units, "School" men have been of recognized service on account of their special training and experience, such as mechanical men in the transports, the electrical in the Signalling Corps, the civil, mining and architectural in the Engineers, etc. Aviation has offered alluring inducements to many, for while McCurdy, '07, Riddell, '04, and others, are busy building machines in Toronto, G. K. Williams, '10, is mechanical superintendent of the Air Training School at Detling in Kent. A reference to the list will show many others connected with this service. School men have thus contributed largely to this, the newest arm of the service.

The Second Field Company of Canadian Engineers were asked to supply a Field Company of War Strength (217) for the First Contingent and in short order Captain T. C. Irving, '06, was on his way to Valcartier with his company fully recruited to strength. With him he took many School men, as officers, non-commissioned officers and sappers. When they sailed for England Irving was second in command. Before reaching France, however (on account of the illness of the major) he was given command of the company. Very shortly afterwards in recognition of his excellent work, he was made major. The good work this company of engineers has done and is doing along the firing line of the Canadian Battle Front in France, is evident from the official despatches of both London and Paris, as well as by the many awards of merit from Britain and France.

Lieutenant now Captain H. F. H. Hertzberg, '07, was rewarded for his brilliant work, with the Military Cross. Sergeant C. B. Ferris received the D.C.M. and the Croix de Guerre.

Sapper now Lieutenant C. P. Cotton, '15, has been awarded the Russian Cross of St. George; and Sergeant W. H. B. Bevan, '05, was also awarded the D.C.M. The official report, as published in the Toronto press, contains the following:

"SERGEANT C. B. FERRIS, Second Engineers, for advancing alone under extremely heavy fire and making a valuable report, after being shot in the lungs."

"SERGEANT W. H. B. BEVAN, Second Engineers, checked

the native troops retiring in disorder and inspired all ranks with his fine example."

While the Second Field Company of Engineers was in England, Corporal M. B. Watson, '10, met with an accident (rolled down an embankment with a motor truck) and as a result was in the hospital when they moved over to France. Later on, however, he was given a commission in the Royal Engineers and ever since has been acting as a lieutenant with an Army Corps Troop in France. His visit (on leave) to the Engineering Society, a short time ago, was a treat, and all who were fortunate enough to hear him will remember the occasion, as one of the features in this college year.

The Machine Gun Section of many of the Canadian Battalions, the Eaton Machine Gun Battery, as well as a large number of the batteries of artillery, contained School men in different capacities.

To-day the attendance at the Old School is so greatly reduced that if the roll were called at a muster parade, not more than two hundred would answer to their names. The ranks of the staff are likewise thinner, as the call keeps up, for they, too, are "doing their bit." Many of those left are doing extra duties, in order to let their confreres off for military service. Professor McConnell, is now captain and adjutant of the 116th Battalion, C.E.F.; Professor Cockburn with the rank of captain, has command of "A" company in the 170th Battalion; Mr. J. S. Galbraith, is assistant adjutant of the 123rd Battalion; Mr. H. O. Merriman, with the rank of flight lieutenant, is with the Royal Naval Air Squadron; Mr. G. H. Hally is a gunner with the 26th Battery, and Mr. A. L. Steele is with the Canadian Army Service Corps.

Professor C. R. Young and Mr. H. H. Madill, are on the Cadre of the School of Instruction for Number 2 Division, while Professor T. R. Loudon has charge of the Instruction in Engineering to the C.E.F.'s Battalions for Number 2 Division. Major A. D. LePan is adjutant with the School of Instruction in the same division.

It is safe to say that there will be a great representation from the Faculty of Applied Science in the University Overseas units, just authorized, viz., the University of Toronto Officers' Training Company and the University of Toronto Battery of Artillery.

At the recent Garrison Artillery examination held in England, two School men, E. B. Allan, '16, and R. T. C. Hoidge, '16, stood first and second respectively in the examination for second lieutenants.

The following list of School men on active service is as complete as the Engineering Society has been able to compile and any corrections or additions will be welcomed.

That so many of the undergraduates of last session and this have been able to acquit themselves so efficiently, is largely due to the enthusiastic manner in which they have availed themselves of the opportunities offered by the University of Toronto Contingent of the Canadian Officers' Training Corps, which was established shortly after the outbreak of hostilities, by the Honourable Sir Sam Hughes, Minister of Militia, at the request of President Falconer.

ON ACTIVE SERVICE

† Killed in action. ‡ Wounded. ° Prisoner of war. * Honors.

- Abendana, E. M., Lieut., '14; Canadian Engineers.
 Adlard, L. S., Lieut., '15; Camp Lab. Unit, 2nd Div.
 Affleck, J. K., '18; 67th O.S. Bty., C.F.A.
 Affleck, R. D., '18; 67th O.S. Bty., C.F.A.
 Aggett, W. H., Gnr., '17; 25th Bty, C.F.A.
 Allen, Carl W., Capt., '01; 2nd Canadian Pioneers Bn.
 Allan, E. B., 2nd Lieut., '16; Imperial Army.
 Allan, F. R., Pte., '18; 35th Bn., Mach. Gun Sec.
 Allan, L. B., '11, Course at S.O.I.
 †Alport, F., Lieut., '06; 6th Field Co., C.E.
 Amsden, W. G., Lieut., '10; 220th Bn.
 Anderson, A. S., Pte., '13; 2nd University Co., P.P.C.L.I.
 Anderson, C. C., Sapper, '16; No. 3 Stationary Hospital.
 Anderson, F. J., Lieut., '07; 98th Bn.
 Anderson, A. C., '15; 2nd Univ. Co., P.P.C.L.I.
 Anderson, R. M., Lieut., '08; Div. Cyclist Depot.
 †Andrews, F. C., Lieut., '14; Imperial Army.
 Andrew, W. B., Lieut., '17; 33rd Bn.
 Angus, J. C., Sapper, '18; Divisional Signal Co.
 Archer, E. G., Lieut., '11; Course at Kingston.
 Armstrong, T. E., Driver, '16; 21st Bty., 6th Howitzer Bde.
 Armstrong, W. D., Sapper, '17; 6th Field Co., C.E.
 Arthur, R. M., Gnr., '15; 25th Bty., C.F.A.
 Austin, F. D., L.-Cpl., '15; 2nd Signal Co., R. C. Engineers.
 Avery, C. R., Gnr., '13; 4th Bde., 13th Bty.
 Aykroyd, G. C., Pte., '18; 40th Bty., C.F.A.
- Baird, W. J., Cpl., '10; Divisional Train, C.A.S.C.
 Baldwin, F. W., Lieut., '06; Royal Flying Corps.
 Baldwin, L. C. M., Lieut., '13; 9th South Lancashire Regt.
 Ball, O. V., Gnr., '17; 47th Bty.
 Barbour, R. A., Lieut., '17; C.A.S.C.
 Barnes, L. F., Lieut., '16; Imperial Army.
 Bartlet, F. A., '15; 1st Contingent.
 Bauer, W. R., Gnr., '17; 25th Bty., C.F.A.
 Beacock, V. A., Pte., '15; 3rd University Co., P.P.C.L.I.
 Beatty, F. W., Gnr., '13; 43rd Bty.
 †Bell, C. A., Lieut., '13; 2nd Field Co.
 Bemrose, B. W., '16; 67th O.S. Bty., C.F.A.
 Bennett, S. G., 2nd-Lieut., '14; Royal Engineers.
 Berkeley, G. L., Capt., '11; Div'l Cycle Corps, O.C.
 Betts, H. H., Lieut., '06; Ry. Transport, Boulogne.
 Bevan, T. H. H., Lieut., '08; M. G. Sec., 86th Bn.
 *Bevan, W. H. B., Cpl., '05; 2nd Field Co. (won D.C.M.)
 Binns, P. V., Lieut., '14; 2nd Fd. Co., Canadian Engineers.
 Binns, R. E., Lieut., '13; Royal Engineers.
 Birchard, E. R., Sgt.-Major, '09; Eaton Bty.

Bishop, C. A., Lieut., '18; 220th Bn.
 Bishop, W. A., Gnr., '17; 25th Bty, C.F.A.
 Black, A. P., Pte., '15; St. John's Ambulance Hosp.
 Blackstock, G. G., Lieut., '15; Imperial Army, General Burstall's Staff.
 Blair, F. J., Lieut., '11; 198th Bn.
 Booz, F. B., Pte., '18; 34th Bty.
 Breen, J. M., Sapper, '18; Divisional Signal Co.
 Breithaupt, J. E., '15; Course at S. of I.
 Brereton, L. R., Sgt., '13; 2nd Troop Co., Can. Engrs.
 Brock, W. M., Sapper, '11; Div'l Signal Co., C.E.
 Brodie, W. M., Lieut., '95; Course at S. of I.
 Brouse, E. D. G., Lieut., '15; C.A.S.C.
 Brown, W. G., 2nd-Cpl., '16; 5th Field Co., C.E.
 Bryant, G. F., Lieut., '18; Imperial Army.
 Burden, H. J., Capt., '15; 75th Bn.
 Burgess, J. R., '10; Canadian Engineers.
 Burn, G. A. H., Pte., '17; Divisional Signal Co.
 Burness, K. C., L-Cpl., '15; 2nd University Co., P.P.C.L.I.
 Burton, C. E., '17; 67th O.S. Bty., C.F.A.
 Burton, H. R., '18; Divisional Signal Co.
 Burwash, N. A., Sapper, '03; 6th Fd. Co. C.E.
 Bush, C. E., Lieut., '07; Div'l Cycle Corps.
 Bussell, E. I., Lieut., '19; Course at P.S.I.
 Byres, E. S., Gnr., '17; 25th Bty.

Cameron, O. L., Lieut., '13; 12th Rgt.
 Campbell, F. W., Pte., '18; R.C.H.A.
 Campbell, H. M., Lieut., '14; Spec. Service Squad, 1st Hussars.
 2 C.E.F.
 ‡Campbell, P. G. C., Lieut., '15; R.F.C.
 Campbell, J. J., Lieut., '14.
 Campbell, J. J., '14; 67th O.S. Bty., C.F.A.
 ‡Campbell, W. C., Lieut., '05.
 Canniff, C. M., Pte., '88; 74th Bn.
 Carlyle, W. M., Lieut., '10 Royal Naval Flying Corps.
 Carmichael, A. H., Lieut., '18; 180th Bn.
 Carscallen, H. R., Lieut., '08; Canadian Engineers.
 Carruthers, K. L., Lieut., '19; Imperial Army.
 Carter, J. M., Gnr., '14; 34th Bty.
 Catto, R. W., Lieut., '15; Royal Flying Corps.
 Caudwell, N. S., Lieut., '10.
 Cavers, J. P., Sgt., '16; Machine Gun Section, C.E.F.
 Cawley, H. E., Lieut., '09; 7th Bty., 3rd Bde.
 Chamberlain, K. H., Sgt., '18; H. Q. Base Staff.
 Chambers, E. V., Lieut., '14; 92nd Bn., Machine Gun Section.
 Chantler, H. M., Pte., '19; Div'l Cycle Corps.
 Chapman, J. R., Gnr., '16; 49th Bty.
 Chavignaud, L. G., '15; 19th Bn.
 Cheney, S. K., Gnr., '16; 25th Bty., 7th Bde.
 Chesnut, A. W., Pte., '10; 4th Univ. Co., P.P.C.L.I.

- ‡Chesnut, E. F., Cpl., '11; 19th Bn., No. 1 Co.
 Clarke, F. F., Lt.-Col., '03; 127th Bn. O.C.
 Clark, H. S., Lieut., '10; 36th Bn.
 Clarkson, G. E., Lieut., '13; 123rd Bn.
 Coatsworth, C. P., Lieut., '18; Pioneers Bn.
 Cockburn, G. A., Lieut., '15; 43rd How. Bty., C.F.A.
 Cockburn, J. R., Capt., '01; 170th Bn.
 Cockburn, R. M., Lieut., '15; 116th Bn.
 ‡Code, A. G., Sapper, '10; Div. Engineers, 1st C.E.F.
 Connor, R. A., Lieut., '18; Imperial Army.
 Cooch, H. A., Q.M., '09; 216th Bn.
 °Cory, R. Y., Capt., '08; 15th Bn.
 *Cotton, C. P., Lieut., '15; 2nd Bde., C.F.A. (Cross of St. George)
 Coulthard, R. W., Major, '99; No. 2 Tunnelling Corps.
 Craig, J. H., Capt., '10; Adj. 127th Bn.
 Craigie, D. E., Sapper, '18; Div'l Signal Co.
 Crane, J. W., Lieut., '18; 216th Bn.
 Crawford, A. W., Cpl., '14; Signal Co., C.E.
 Cross, R. A., Pte., '17; 2nd Univ. Co., P.P.C.L.I.
 Crowell, C. R., Lieut., '19; Imperial Army.
 Crysler, R. A., Gnr., '17; 47th Bty.
 Curtis, W. T., Lieut., '13; 2nd Canadian Pioneers Bn.
 Crowe, H. L., '19; Royal Flying Corps.

 Dalton, George F., Lieut., '14; Canadian Engineers.
 Dingnam, H. M., '19; 67th O.S. Bty., C.F.A.
 Dale, W. P., Sapper, '17; Divisional Signal Co.
 DaCosta, W. R., Lieut., '15; Royal Flying Corps.
 Dafoe, E. R., Gnr., '17; 25th Bty., C.F.A.
 ‡Daniel, N. H., Lieut., '15; Artillery.
 Daniel, T. A., '16; 26th Bty., C.F.A.
 ‡Dashwood, G. R., '16; 13 Northumberland Fusiliers.
 Dashwood, R., Lieut., '14; 13 Northumberland Fusiliers.
 Davidson, G. P., Lieut., '15; Imperial Army.
 Deacon, L. J., '18; Army Transport.
 Dean, W. A., Lieut., '15; 198th Bn.
 DeGruchy, P. C., '17; Field Ambulance.
 Delamere, R. D., Lieut., '14; Royal Flying Corps.
 Delaporte, A. V., Capt., '10; Hyd. Corps.
 Devlin, H. K., Lieut., '18; 75th Bn.
 Dickenson, M. E., Pte., '18; Div'l Ammunition Sub-Park.
 Dobbin, W. L., Lieut., '16; Canadian Engineers.
 Downey, G. A., Lieut., '15; 12th Bty., C.F.A.
 Downie, R. W., , Sgt., '16; 2nd Field Co., C.E.
 Downing, F. H., '11.
 Drybrough, J., Pte., '19; 67th O.S. Bty., U. of T.
 Duncan, J. M., Lieut., '10; H.M.S. Lion, R.N.
 Durbrow, P. A., Gnr., '17; 26th Bty., C.F.A.
 Dustan, E. B., Gnr., '17; 25th Bty., C.F.A.
 Duggan, S. F., '18.

Eadie, L. F., L.-Cpl., '10; 75th Bn.
 †Eardley-Wilmot, F. L., Lieut., '17; P.P.C.L.I.
 Eastwood, J. H., Lieut., '16; 93rd Bn.
 Eby, H., Pte., '17; 47th Bty., C.F.A.
 Edmonds, C. W., Gnr., '16; 25th Bty., C.F.A.
 Elliott, G. R., Lieut., '11; Div'l Cyclist Corps.
 *†Ellis, S. D., Lieut., '14; Imperial Army (died after operation for
 appendicitis). (Awarded M.C.).
 Evans, A. C., '15.

Farrelly, T. J., Sapper, '11; Div'l Signal Co.
 Fasken, J. E., '18; 67th O.S. Bty., C.F.A.
 Ferguson, D. G., Lieut., '14; 123rd Bn.
 Ferguson, G. H., Capt., '05; Canadian Engineers.
 †**Ferris, C. B., Sgt., '13; 2nd Field Co., C.E. (D.C.M.; Croix de
 Guerre).
 Firstbrook, J. H., Lieut., '18; Royal Flying Corp, (Naval Wing).
 Fleming, G. O., Lieut., '14; 1st Construction Bn.
 Fleming, G. R. S., Sub-Lieut., '07; Royal Naval Air Service.
 †Fleming, J. S., Sgt., '14; 2nd Canadian Pioneers Bn.
 Flint, C., Lieut., '08; C.P. Ry. Construction Corps.
 Fowlds, E. S., Sapper, '13; 2nd Field Co.
 Fraser, R. A., Lieut., '16; 37th Bn.
 French, W. G., '15; Ry. Construction Corps.
 Frid, H. P., '15; 86th M.G. Bn.
 †Frogley, H. W., Corp., '11; 5th Field Co.
 Fuller, C. H. R., Lieut., '14; 216 Bn.

Gage, C. E., Sgt., '16; Ammunition Column, 4th Bde.
 Galbraith, J. S., Capt., '13; 123rd Bn., Asst. Adj.
 Galbraith, R. D., Lieut., '15; 23rd Reserve Bn., C.E.F.
 Gall, Hugh, Lieut., '10; 2nd Fd. Coy, Canadian Engineers.
 Gardner, J. W., Lieut., '18; 177th Bn.
 Gardner, R. T., L.-Cpl., '19; 53rd Bty.
 Gardner, D. B., Lieut., '16; Canadian Engineers.
 Garrow, A. B., Lieut., '07; 74th Bn.
 Garvie, J. A., Lieut., '18; Imperial Army.
 Geale, C. N., Flight Sub-Lieut., '15; Royal Naval Air Service.
 Gemmell, K. S., Sapper, '18; Div'l Signal Corps.
 German, D., '17; 4th Bde. Hdqts., C.F.A.
 Gibson, F. R., Lieut., '17; Mechanical Transport.
 Gibson, J. M., Capt., '10; 127th Bn.
 Gilley, J. R., Lieut., '17; 234th Bn.
 Gilley, E. R., Sapper, '17; Divisional Signal Co.
 Gill, E. I., Lieut., '14; Course at Kingston.
 Gillies, A., Lieut., '07; 186th Bn.
 Givens, H. F., Lieut., '19; Imperial Army.
 Glass, L. G., Sapper, '15; 4th Div'l Signal Co.
 Glover, T. S., 2nd-Lieut., '17; 3rd Bn. King's Own Yorkshire
 Light Infantry.
 Gooderham, G. A., Lieut., '15; R.F.C. (Naval Wing).

- Gooderham, H. S., Lieut., '18; 20th Bn.
 Gordon, R. V., '18; 88th Bn.
 Gorrie, H. T., Lieut., '18; C.A.S.C.
 Gouinlock, G. R., '18; Course at Kingston.
 Gouinlock, R. W., Lieut., '14; 123rd Bn.
 Graham, D. S., Lieut., '17; Div'l Cycle Corps.
 Graham, T. S., Sapper, '15; Div. Signal Co.
 Grange, E. R., Lieut., '15; R. F. C.
 Grassett, H. A. M., Pte., '16; 3rd Bn.
 Gray, A. G., Lieut., '13; 44th Reg.
 †Gray, A. J., Lieut., '13; 16th Bn.
 Gray, G. S., Lieut., '15; Royal Flying Corps.
 °Greene, E. A., Lieut., '11; 9th Bty., 3rd Bde.
 °Greene, G. E. D., Lieut., '09; 3rd Bn.
 Greene, P. W., Lieut., '06; 35th Bn.
 Greey, Allan, Lieut., '09; 170th Bn.
 Gzowski, J. S., Lieut., '09; 19th Bn.
- Haas, M. S., Lieut., '15; 36th Bn.
 Hadley, W. F., '16; No. 1 Div. Corp of Guides.
 †Hagarty, D. G., Lieut., '16; 2nd Univ. Co., P.P.C.L.I.
 Hague, R. D., Sapper, '08; No. 3 Co., Div'l Engineers.
 Haldenby, E. W., Lieut., '17; 92nd Bn.
 Hally, G. H., Gnr., '14; 26th Bty., C.F.A.
 Hames, C. O. R., Sapper, '19; Div'l Signal Co.
 Hanna, J. J., Sapper, '14; 1st Field Co., C.E.
 Harcourt, R. M., Capt., '09; 35th Bn.
 Harman, J. A., Sub-Ft. Lieut., '11; Royal Flying Corps.
 †Harris, R. W., 2nd Lieut., '15; R. E.
 Harrison, R., Sapper, '18; Divisional Signal Co.
 Harron, L. W., Lieut., '16; 204th Bn. (Signalling Officer).
 Harrop, C. E., '17; 67th O.S. Bty., C.F.A.
 Harvie, N. J., '10.
 Hastings, C. E., Lieut., '16; C.A.S.C.
 Hastings, M. B., '11; Course at Kingston.
 Hawkey, R. R., Gnr., '17; 47th Bty.
 Hayman, L. T., Lieut., '14; Course at P.S.I.
 Heatley, A. H., Pte., '19; 5th Univ. Co. P.P.C.L.I.
 *†Heaton, H. A., Lieut., '15; Royal Lans. Regt. (Won M.C.).
 †Helliwell, J. G., Capt., '10; 1st Bn.
 Henderson, M. G., Gnr., '17; 47th Bty, C.F.A.
 Henderson, T. D., Lieut., '04; Canadian Engineers.
 Heron, J. B., Lieut., '04; 1st Const. Batt.
 *†Hertzberg, H. F. H., Capt., '07; 2nd Field Co., 3rd Bde. (Won M.C.)
 Hewson, C. G., 2nd-Lieut., '17; Royal Flying Corps.
 Hewson, R. R., Lieut., '15; Ry. Constr. Corps.
 Hill, Gnr., 43rd Bty.
 Hinch, E. F., '11; C.F.A.
 Hoag, C. K., '17; Sig. Sec., 4th C.M.R.
 Hoidge, R. T. C., 2nd-Lieut., '16; Imperial Army, R.G.A.

- Holcroft, H. S., '00; No. 2 Tunnelling Co., Calgary.
 Hopkins, C. H., Sapper, '09; 5th Field Co., C.E.
 Hopkins, H. R., '16; Ammunition Column.
 †Hopkins, R. H., Lieut., '06; 39th Bn. (wounded in motor car accident).
 Houston, F. C. A., Act.-Sgt.-Major, '19; 201st Bn.
 Howes, E. A., Pte., '17; 41st Bty.
 Howlett, T. F., '13; 2nd Contingent.
 Hughes, B. H., Sapper, '14; 6th Field Co., C.E.
 †Hughes, Chester, Lieut., '09; 6th Field Co., C.E.
 Hughes, C. A., Gnr., '17; 47th Bty.
 Hume, A. G., '18; U. of T. O.S. Training Co., C.O.T.C., C.E.F.
 Hunter, W. H., Lieut., '17; Course at P.S.I.
 Husband, L., Lieut., '16; 76th Bn.
 Hutchings, W., '14; 34th Bty.
 Hutcheson, F. W., Lieut., '13; Canadian Engineers.
 Hall, W. T., '15; Royal Flying Corps.

 Ingersoll, L. H., Sub-Flight-Lieut., '17; Royal Flying Corps.
 Ingles, C. J., Major, '04; 176th Bn.
 Irving, T. C., Major, '06; 2nd Field Co., Canadian Engineers.
 Irwin, H., Lieut., '09; 14th Bty.
 Ives, V. E., Pte., '17; No. 4 General Hospital.

 Jackson, K. B., Pte., '16; 49th Bty., C.F.A.
 Jack, T. B., '18; Imperial Army Service Corps.
 Jarvis, R. H., Lieut., '11; Royal Naval Air Service.
 Johnston, E. W., Gnr., '17; 54th Bty.
 Johnson, S. H., Lieut., '18; .
 Jones, L. E., Capt., '11; 2nd Bn.
 †Jones, Trafford, Lieut., '06; Royal Flying Corps.
 Jones, R. E., '14; C.A.S.C.
 Junkin, R. L., Lieut., '13; 5th Field Co., C.E.
 Jupp, E. H., Gnr., '15; 40th Bty.

 Kay, J., Lieut., '14; 15th Bn.
 Kayler, K. D., Sapper, '18; Divisional Signal Co.
 Keefer, N. G., Lieut., '14; Imperial Army.
 Keith, D. F., Major, '07; 75th Bn.
 †Kerby, H. S., Lieut., '14; Royal Flying Corps, No. 3 Squadron.
 Killip, Lieut., '08; 86th Bn.
 Kilmer, C. E., Lieut., '13; 19th Bn.
 Kirby, R. W., Bom., '16; 53rd Bty., C.F.A.
 Klinger, L. W., Lt., '07; 2nd Field Co., C.E.
 †Klotz, H. N., Lieut., '09; 2nd Bn.
 Knight, A. G., Lieut., '17; Royal Flying Corps (Army Branch).
 Knight, J. A., Cpl., '14; 3rd Divisional Cycle Corps.
 Krug, S. J., Pte., '16; Mechanical Transport, C.A.S.C.

 Laing, P. A., Pte., '05; 2nd Univ. Co. P.P.C.L.I.
 Langford, J. A., Lieut., '18; Divisional Signal Corps.

Latornell, A. J., Lieut., '03; 14th Bty.
 †Lawless, N., Driver, '11; 5th Bn., 2nd Bde. (died of fever).
 Lawrence, G. W., Lieut., '15; 81st Bn., Sig. Officer.
 Lee, L. A. C., Lieut., '16; Divisional Signal Corps, C.E.
 Legate, J. H., Gnr., '17; 25th Bty, C. F. A.
 LePan, A. D., Major, '07; Headquarters Staff.
 Leslie, A., Lieut., '13; Course at Kingston R. So. of Art.
 Little, H. B., Lieut., '16; B. Reserve Bde., R.H.A.
 Livingstone, A. H., '18; 5th Univ. Co., P.P.C.L.I.
 Lloyd, E. G., '18; 34th Bty, C.F.A.
 Lockhart, W. E., Sapper, '15; 2nd Signal Co., R.C. Engineers.
 Lorimer, N. H., '14; C.F.A.
 Loudon, T. R., Lieut., '05; 1st Construction O.S. Bn.
 Lowrie, A. W. P., '11; 82nd Bn.
 †Lye, O. G., Cpl., '14; 2nd Univ. Co., P.P.C.L.I.

MacBeth, R. E. A., Lieut., '11; Royal Flying Corps (Army Branch).
 Macaulay, G. B., '14; 1st Contingent.
 Macaulay, R. V., Bom., '11; 2nd Bde., 5th Bty.
 McClelland, J. P., Pte., '18; Ammunition Sub-Park, 2nd Div., C.E.F.
 McClenaghan, V. S. C., Pte., '18; Canadian Engineers.
 McClintock, G. A., Bom., '17; 2nd Bde., C.F.A.
 McColl, J. R., Lieut., '16; 124th Bn.
 McConnell, A. W., Capt., '06; Adj. 116th Bn.
 McCort, C. R., Lieut., '15; No. 6 O.S. (McGill) Bty., Siege Artillery, C.F.A.
 McCuaig, O. B., Q.M.S., '04; 2nd Field Co., 3rd Bde.
 Macdonald, C. E., Lieut., '16; F.O. Co., C.E.
 Macdonald, W. A., Pte., '14; 2nd Pioneers Bn.
 MacDonald, H. H. R., '11; Royal Sussex Regt.
 MacDonald, J. A., Pte., '17; 2nd Div. Cycle Corps.
 McDonald, K. D., Gnr., '15; 25th Bty., C.F.A.
 MacDonald, R. A., Pte., '16; 54th Bty., C.F.A.
 MacDonell, I. M., Lieut., '15; Corps of Guides.
 MacDougall, A. C., Lieut., '01; Canadian Engineers.
 McAllister, A. L., Lieut., '93; Canadian Engineers.
 McArthur, A. S., '09; 35th Bn.
 McCaffrey, W. R., '15; Cycle Corps.
 McCarthy, T. V., Gnr., '13; 43rd Bty.
 McEachern, F. Y. P., Lieut., '09; 198th Bn.
 McEwen, G. A., Gnr., '17; 47th Bty.
 Macfarlane, A. H., Pte., '16; C.E.F.
 Magann, G. L., Lieut., '15; Div. Ammunition Col.
 McGavin, P. L., Lieut., '18; Imperial Army.
 McGhie, W. G., Lieut., '11; 35th Bn.
 MacGregor, A. E., '10; 142nd Bn.
 McIntyre, P. F., Lieut., '18; 67th O.S. Depot Battery.
 McKague, E. V., Lieut., '15; Divisional Cycle Corps.
 McKay, E. G., Lieut., '10; 91st of Hamilton.
 MacKendrick, G. K., Lieut., '18; 81st Bn.

- †MacKenzie, A. M., Pte., '14; M. G. Sec. 19th Bn.
 MacKenzie, H. J., Lieut., '14; Canadian Engineers.
 MacKenzie, J. A., Sapper, '19; Divisional Signal Co.
 McKinley, F. A., Gnr., '17 25th Bty., C.F.A.
 McKirdy, W. S., '11; Divisional Signal Co., C.E.
 MacLachlan, W.A., Lieut., '09; 134th Bn.
 Maclaren, H. J., Lieut., '18; Reserve Bde., C.F.A.
 McLaren, A. J., Lieut., '11; Cameron Highlanders.
 MacLean, A. P., '17; 20th Bn.
 MacLennan, G. G., '10; R. F. C. (Naval Wing).
 MacLeod, D. D., '10.
 McMillan, J. G., Lieut., '00; Royal Engineers.
 McMordie, H. C., Capt., '08;
 McPherson, F. T., L.-Cpl., '16; 2nd Univ. Co., P.P.C.L.I.
 McPherson, W. B., Capt., '11; Course at S. of I.
 MacQuarrie, A. H., Sapper, '14; Divisional Signal Co., C.E.
 McQueen, A. A., Lieut., '11; 29th Bty.
 Macqueen, C. B., '19; 201st Bn.
 McSloy, J. I., Capt., '10; 20th Bn.
 MacTavish, H. J., Lieut., '10; R.F.A.
 MacTavish, W. H., '13.
 McVean, J. H., Lieut., '18.
 McMurtry, L. C., '19; 67th O.S. Bty., U. of T.
- Madill, H. H., Capt., '11; Instr., S. I., No. 2 Div.
 Maguire, J. R., 2nd Lieut., '19; 14th West Yorkshires, B.E.F.
 Malcolm, F. R., Lieut., '19; Imperial Army.
 Manning, T. R., Lieut., '16; 74th Bn.
 Mansell, G. R., L.-Cpl., '14; 3rd Divisional Cycle Corps.
 †Marani, F. H., Lieut., '16; 3rd Bn.
 Marlatt, K. D., Capt., '08; 20th Bn.
 Marshall, J. A. P., Lieut., '14; Canadian Engineers.
 °Mason, D. H. C., Capt., '07; 3rd Bn., 1st Bde. (Missing).
 Matthews, F. J., Gnr., '16; 25th Bty., C.F.A.
 Mayberry, F. C., '17; 25th Bty.
 Mendizabal, A. R., Gnr., '16; 23rd Bty., 6th How. Bde.
 Merriman, H. O., Flt.-Sub-Lieut., '10; Royal N. A. S.
 Merry, F. S., Gnr., '16; 25th Bty, 7th Bde.
 Metcalfe, W. F., '19; Divisional Signal Corps.
 Michell, A. V., '19; 67th O.S. Bty., U. of T.
 Miller, D. J., Lieut., '10; 4th Field Co., C.E.
 Millar, W. G., Lieut., '14; Course of S. of I.
 Milligan, F. S., Lieut., '10; Imperial Army.
 Millman, N. C., Lieut., '13; R.M.A.C.
 Mills, G. G., Capt., '07; Artillery course.
 Mills, L. G., Lieut., '11; 74th Bn.
 Mills, P. H., Sgt., '14; 31st Bty, C.F.A.
 Milne, J. W., Pte., '19; Divisional Signallers.
 *Mitchell, C. H., Lt.-Col., '92; G.S.O. (awarded D.S.O.; La Legion d'Honneur Croix d'Officier).
 Mitchell, F. L., Lieut., '17; 83rd Bn.

Mitchell, G., Lieut., '15; Imperial Army.
 Mitchell, J. S., Lieut., '14; 12th Regt.
 Mitchener, J. R., Lieut., '18; 4th Univ. Co., P.P.C.L.I.
 Molesworth, G. N., Capt., '07; 124th Bn.
 Monds, W., Lieut., '99; Canadian Engineers.
 Monteith, E. M., Capt., '15; 97th Militia Regt.
 Monteith, J. C., Pte., '19; 110th Bn.
 Moody, F. H., Major, '08; 116th Bn.
 Moorehouse, E. L., Gnr., '17; 26th Bty.
 Morice, J. H., Lieut., '08; Canadian Engineers.
 Morphy, J. A., Major, '11; 2nd Contingent.
 Morris, B. M., Lieut., '15; 59th Bn.
 Morris, W. G., '19; 67th O.S. Bty., U. of T.
 Morton, C. O., Sapper, '19; Divisional Signal Co.
 Muir, J. M., Lieut., '15; 127th Bn.
 ‡Mulqueen, F. J., Lieut., '13; 172 Mining Co., R.E.
 ‡Munro, A. H., Sapper, '10; 5th Field Co.
 Murdie, W. C., '13.
 Murton, J. C., Lieut., '11; C. F.A.
 Murray, W. P., Lieut., '08; C.P. Ry. Constr. Corps.
 Musgrave, J. E. T., '18; 67th O.S. Bty., C.F.A.

Nash, J. C., '10.
 Neelands, R. E. K., Sgt., '07; 43rd Bty.
 New, R. H., Lieut., '10; 1st F. T., C.E.
 Newton, J., Lieut., '09; 67th O.S. Depot Bty.
 ‡Nichol, F. T., Capt., '10; 100th Bn.
 Nicholson, H. R., Lieut., '17; 13th Royal Regt.
 Nixon, W. H., '18; Divisional Cyclist Corps.
 Norris, A. F. C., Pte., '17; 20th Bn.
 Norwich, H. B., L.-Cpl., '16; 2nd Div. Cycle Corps.
 Norval, T. H., '18; Divisional Signalling Co.

Oke, W. V., Lieut., '11; 35th Bn.
 Ormsby, J. A. N., Lieut., '16; Eaton Machine Gun Bty.
 Orr, H. W., '18; 26th Bty., C.F.A.
 Oxley, A. C., Capt., '10; 2nd Field Co.

Panter, J. S., Gnr., '16; H.Q. St., 4th Bde.
 Parker, A. H., Lieut., '14.
 Parker, W. J., Sapper, '18; Divisional Signal Co., C.A.
 Parkinson, N. F., Bom., '13; 4th Bde., 13th Bn.
 Parsons, C. S., Lieut., '19; Corps of Guides.
 Parsons, J. L. R., Major, '01; Gen. Steele's Staff.
 Pearce, G. M., Lieut., '18; 124th Bn.
 Pearson, H., Pte., Divisional Cycle Corps.
 Penhale, T. W., Lieut., '18; Imperial Army.
 Pepler, S. H., Lieut., '18; 124th Bn.
 Peplar, S. J., Lieut., '11; Divisional Cyclist Depot.
 Perry, C. V., '14; Royal Engineers.
 Perry, F. M., Lieut., '98; 15th Bn.

Peterking, S. M., Sgt., '15; 41st Bty.
 Pfrimmer, V. R., Gnr., '16; 25th Bty., C.F.A.
 Phillips, A. M., '19; Course at R.M.C.
 Phillips, W. E., Capt., '14; Royal Leinster Reg., 7th Bn.
 Philp, E. B., Gnr., '19; 54th Bty.
 ‡Philp, W. M., Sapper, '09; 2nd Field Co., C.E.
 Pollock, F. J., '19; Course at Kingston.
 Powell, N. L., Lieut., '16; 208th Bn. (Signalling Officer).
 Powell, W. D., Pte., '15; C.P.R. Construction Corps.
 Pringle, J. E., Lieut., '16; Imperial Army.
 Pullen, E. F., Capt., '05; 97th Rgt.
 Purchas, C. M. G., Gnr., '17; H. Q. Staff, 4th Bde., C.F.A.

Qua, A. H., '08.

Raley, W. E., Cpl, '15., 2nd Field Co., Can. E., C.E.T.D.
 Rayner, G. V., Lieut., '18; 86th Bn.
 Read, F. N., Pte., '11; 2nd Univ. Co., P.P.C.L.I.
 Redfern, W. B., Signaller, '08; Divisional Signalling Co.
 ‡Redman, W. B., Sgt., '15; 5th Field Co., R. C. Engineers.
 Reed, H., Lieut., '17; Course at S. of I.
 Reid, E. V., Lieut., '11; Royal Flying Corps.
 ‡*Reid, J. M., Lieut., '15; Seaforth Highlanders (awarded V.C.)
 Relyea, J. D., Gnr., '17; Ammunition Column.
 †Revell, G. E., Sapper, '99; 1st Field Co., Canadian Engineers.
 Richardson, A. A., Lieut., '15; 93rd Bn.
 Richardson, W. A., '11; H. Q. Staff, 3rd Bde.
 Riddell, J. M., '13; Canadian Engineers.
 Rile, G. W., Lieut., '19; C.A.S.C., Mechanical Transport.
 Ritchie, J. E., Lieut., '13; 147th Bn. (Machine Gun Officer).
 Ritchie, W. W., Lieut., '16; 35th Bn.
 Robertson, A. R., Capt., '08; 169th Bn.
 Robertson, J. M., Lieut., '14; 65th Royal F. Art.
 Robertson, N. R., Capt., '06; 2nd Field Co., C.E.
 Robertson, W. G., '18; 67th O.S. Bty, C.F.A.
 Robinson, D. A., Lieut., '18; 99th Bn.
 Rogers, C. H., Lieut., '06. On Sir Max Aitken's staff.
 Rolfson, O., Lieut., '06; S. O. I. at London.
 Rose, H. C., Lieut., '16; Imperial Army.
 Rose, J. T., Hqts. Staff, '15; 48th Battalion.
 Rose, R. R., '08; Black Watch.
 Ross, A. C., Sgt., '15; Course at Kingston.
 Rous, C. C., Capt., '13; Engineers.
 Rowe, H. M., Lieut, '15; 71st Bn.
 Rutherford, F. N., '04.
 Rutherford, F. S., Corp., '14; 2nd Field Co., Canadian Engineers.
 Rutley, F. G., Capt., '11; 83rd Bn.
 †Rutter, G. W., Lieut., '15; 4th Canadian Mounted Rifles.
 †Ryerson, G. C., Capt., '05; 3rd Bn.
 Ryan, T. L., Lieut., '17; 215th Bn.
 Schell, M. D., Pte., '18; 5th University Co., P.P.C.L.I.

- Schwartz, G. B., '16; Capt., Cycle Corps.
 Scott, A. G., Lieut., '15; 82nd Bn.
 Scott, C. A., Lieut., '09; 198th Bn.
 Scott, E. H., Sgt., '15, Ammunition Column, 8th Bde.
 †Segre, B. H., '09; 13th Bn., 4th Bde.
 Seibert, P. T., Sgt., '19; 160th Bn.
 Serson, H. V., Lieut., '05; Canadian Engineers.
 Seymour, N. F., '15; 5th Divisional Signal Co.
 Sharman, J. E., Lieut., '17; Royal Flying Corps.
 Sharp, M. C., Gnr., '13; 2nd Bty., C.F.A.
 Shaw, W. E. V., Capt., '08; 52nd Bty., C.F.A.
 Sheard, Paul, Lieut., '11; C.A.S.C., 3rd Divisional Train.
 Sheppard, A. C. T., Cpl., '07; 4th Field Co., Canadian Engineers.
 Sheppard, H. L., Lieut., '14; Course at Kingston.
 Sherman, N. C., Capt., '10; Canadian War Purchasing Commis'n.
 Shier, W. G., Gnr., '15; 25th Bty., 2nd Bde., C.F.A.
 Shoebottom, L. R., Lieut., '17; .
 Sills, C. P., Gnr., '11; 43rd How. Bty., C.F.A.
 Sime, A. W., Lieut., '14; 35th Bn., M. G. Sec.
 Simmers, J. A., Pte., '18; 2nd Univ. Co., P.P.C.L.I.
 Simmons, J. F. L., Gnr., '15; 4th Bde., C.F.A.
 Simpson, B. N., Lieut., '14; C. F. A.
 Simpson, F. W., Sapper, '18; Divisional Signal Co.
 Sinclair, C. E., Lieut., '14; Royal Irish Fusiliers.
 †Sinclair, I. M. R., Capt., '17; 13th Bn.
 Sinclair, R. B., Lieut., '15; Royal Field Art., 3 B. Res. Bde.
 Smith, A. H., Lieut., '99; 2nd Canadian Pioneers Bn.
 Smith, C. H., '17; 25th Bty., 7th Bde., C.F.A.
 Smith, D. A., Cpl., '04; 5th Bn.
 Smith, F. L., Gnr., '10; 13th Bty., 4th Bde.
 Smythe, Conn, Lieut., '16; 40th Bty., 7th Bde.
 Smythe, G. M., Capt., '14; 76th Bn.
 Sneath, Roy G., Lieut., '11; 3rd Div'l Canadian Engineers.
 Snow, G. B., Lieut., '16; 134th Bn.
 Souter, J. M., Lieut., '18; 133rd Bn.
 Spencer, A. C., Lieut., '07; 2nd Can. Divisional Cavalry.
 Standing, R. O., Pte., '14; 3rd Divisional Supply Col., C.A.S.C.
 Stalker, C. H., Lieut., '18; G.G.B.G.
 Steele, A. L., '10; A.S.C., Canadian Engineers.
 Steele, W. A., Lieut., '15; Divisional Signalling Officer.
 Steers, F. P., Lieut., '14; Canadian Engineers.
 Stevenson, C. W. G., Gnr., '17; 29th Bty.
 Stephenson, G. E., Sapper, '17; Divisional Signal Co.
 Stewart, A. E., Lieut., '11; Signal Co., C.E.
 Stewart, D. L. N., '05; 20th Bn.
 Stewart, H., Pte., '16; 20th Bn., M. G. Sec.
 Stock, J. J., Sapper, '08; Signal Co.
 Storms, D. H., Lieut., '15; 8th Bty.
 Stratford, G. S., Pte., '16; 2nd Univ. Co., P.P.C.L.I.
 Strathy, J. M., Sapper, '13; Signal Co., C.E.

Stuart, H. B., Lieut., '08; 2nd Canadian Pioneers Bn.
 Sutcliffe, C., Capt., '10; 77th Bn.
 Sutherland, D., Lieut., '13; 110th Bn.
 Swinnerton, A. A., Pte., '16; Divisional Cycle Corps.
 Swinnerton, A. F. R. W., Lieut., '16; 166th Bn.
 Szammers; Cpl., '11; 2nd Can. Pioneers Bn.

Tate, H. W., Capt., '09; 2nd Canadian Pioneers Bn.
 Taylor, F. H., Lieut., '18; 204th Bn.
 †Taylor, G. B., Lieut., '14; 15th Bn.
 Taylor, J. S., '14; Motor Bty.
 Taylor, R. E., '16; 2nd Contingent.
 Ternan, R. E., '10; British Admiralty.
 Thomas, A. M., Lieut., '16; Royal Flying Corps (Naval Wing).
 Thomas, G. C., Lieut., '11; Imperial Army.
 Thompson, C. C., Lieut., '17; 124th Bn.
 Thompson, H. G., Pte., '18; 135th Bn.
 Thompson, R. J., '19; Divisional Cycle Corps.
 Thornley, J. H., Major, '08; 33rd Bn.
 Tillson, L. B., '15; Imperial Army.
 Tilston, J. A., '14; Canadian Overseas Construction Co.
 Tindale, C. E. W., Gnr., '17; 48th Bty.
 Tobin, K. E., '16; 1st Contingent.
 Tom, J. A., Gnr., '15; 26th Bty, 7th Bde, C.F.A.
 Torrance, R. D., Lieut., '11; 34th Bn.
 Torrance, T. E., Lieut., '13; Course at Royal School of Art.
 Trebilcock, J. A., Lieut., '15; 4th Bde., R.F.A.
 Trees, A. G., Lieut., '09; Course at S. of I.
 Tremayne, J. E., Lieut., '16; 127th Bn.
 Twidale, E. A., Lieut., '14; Imperial Army, R.F.A.
 Trywhitt, R., Lieut., '16; 215th Bn.
 Tracy, G. F., '18; Divisional Signalling Co.
 Tough, W. G., Lieut., '11; 14th Bty.

Utley, R. A., Pte., '10; 2nd Univ. Co., P.P.C.L.I.

°VanAllen, K. M., Lieut., '10; R.N.A.S.
 VanNorman, C. P., Lieut., '08; 127th Bn.
 Vaughan, O. D., Lieut., '17; C.A.S.C.
 Verity, M. F., Lieut., '14; 125th Bn.
 Vernon, A. A. H., Lieut., '18; 10th East Surrey Regt.
 †VanSittart, G. E., Major, '05; 13th Bty., C.F.A.

Wait, G. E., Lieut., '17; 12th York Rangers, 220th Bn.
 Walcott, W. D., Pte., '11; 5th Univ. Co., P.P.C.L.I.
 Wallace, H. D., Lieut., '17; 234th Bn.
 Wallace, H. D. M., Lieut., '14; Aviation Corps.
 Wallace, J. S. M., Gnr., '17; 67th O.S. Bty., U of T.
 Wallis, H. M., L.-Cpl., '16; Aide to Brig.-Gen. Wallis, 16th Bn.
 Wallis, J. H., L.-Cpl., '15; 16th Bn. (Home on sick leave).
 Ward, A. L., Sgt., '15; H.Q. Staff, No. 2 Div., under Major Dunn.

- Ward, H. G., Sapper, '19; Divisional Signal Co.
 Ward, John W., Gnr., '17; 25th Bty., 7th Bde.
 †Watson, M. B., Lieut., '10; Royal Engineers, Imperial Army
 (wounded in motor car accident).
 Watts, E. M., Major, '11; 198th Bn.
 Watts, R. E., Lieut., '13; 84th Bn.
 Webster, D. B., Lieut., '15; R.C.H.A.
 Webster, H., Lieut., '13; R.F.A.
 Weldon, H. S., Lieut., '18; H.Q. Staff.
 Wells, A. R., Lieut., '16; Imperial Army.
 West, A. M., Lieut., '08.
 West, C. W., Lieut., '15; Course at S. of I.
 Whaley, A. B., Lieut., '16; R.F.A.
 Wheelock, C. H., Pte., '16; 35th Bn., M. G. Sec.
 Whiteside, J. L., Lieut., '10; 46th Bn.
 Whitley, P. L., '14; U. of T. O.S. Training Co., C.O.T.C., C.E.F.
 Wigle, G. B., Lieut., '18; C.A.S.C.
 Wilcocks, W. S., '15.
 Wilkes, G. H., Lieut., '11; R.E.
 Willey, C. M., Lieut., '18; G.A.R., Imperial Army.
 Williams, G. K., Sub-Flt.-Lt., '10; Mech. Supt., Air Training
 School at Detling.
 Williams, J. N., Gnr., '15; 26th Bty., 7th Bde., C.F.A.
 Williams, P. E., Lieut., '18; 124th Bn., Signal Officer.
 Williams, R. E., Gnr., '16; Int. Corps, C. Fd. Art.
 Willmott, L. E., Lieut., '17; 170th Bn.
 †Wilson, Dutch, '15; Sgt., 15th Bn.
 Wilson, J. N., Lieut., '06; Course at Kingston.
 Wilson, J. S., Gnr., '16; 26th Bty., 7th Bde.
 Wilson, L. R., Lieut., '09; C.P.Ry. Construction Corps.
 Wilson, W. S., Lieut., '16; 147th Bn.
 Wimperly, C. C., Lieut., '18.
 Withrow, W. J., Lieut., '90; 2nd Canadian Pioneers Bn.
 Wood, F. A., Lieut., '18; G.G.B.G.
 Wood, H. A., Lieut., '15; Royal Flying Corps.
 Wood, N. C., Lieut., '17; Imperial Army.
 Wood, R. F. B., Capt., '13; 123rd Bn.
 †Worthington, A. N., Major, '13; 169th Bn.
 Wright, A. J., Sgt., '13; 74th Bn.
 Wright, W. J. T., Lieut., '11; 67th O.S. Depot Bty.
 Wylie, W. H., Lieut., '11; Canadian Engineers.
 Wyman, H. K., Gnr., '11; 25th Bty., 8th Bde.

 Youell, L. L., Lieut., '16; 43rd How. Bty., C.F.A.
 Young, C. R., Capt., '03; Instr., S. of I., No. 2 Division.
 Young, J. F., Gnr., '17; 25th Bty., 7th Bde. C.F.A.
 Young, T. J., '18; 25th Bty., 7th Bde., C.F.A.

NOTE.—Additions and corrections to this list will be appreciated by Prof. A. T. Laing, secretary of the Faculty.

